



Çanakkale Onsekiz Mart University

Education Information System

[DEGREE PROGRAMMES](#)[BOLOGNA](#)[THE INSTITUTION](#)[INFO FOR STUDENTS](#)You are here : [Home](#) [Master's Degree& Doctorate Degree](#) [Physics \(PhD\)](#) [Physics Of Semiconductor Devices I](#) **Course Information**

Course Information

COURSE INFORMATION

Course Title	Code	Semester	L+U Hour	Credits	ECTS
Physics Of Semiconductor Devices I	FZ 6035		3 + 0	3.0	7.5

Prerequisites	None
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Language of Instruction	Turkish
Course Level	Third Cycle
Course Type	Elective
Mode of delivery	Face to face
Course Coordinator	Assoc. Prof. Dr. Kıvanç SEL
Instructors	Assoc. Prof. Dr. Kıvanç SEL
Assistants	
Course Objectives	Learning the physics of semiconductor circuit elements of electronic devices.
Course Content	Fundamentals of quantum physics and the properties of crystal structure, energy band theory, theory of electrical conduction, generation-recombination, pn junction diode, metal-semiconductor contacts. JFET and MESFET
Course Learning Outcomes	<ol style="list-style-type: none"> 1) Apply the production methods and structural, electrical and optical characteristics of semiconductor circuit devices. 2) Describe the natural phenomena by physical approach. 3) Relate the knowledge between disciplines. 4) Apply the knowledge of basic science 5) Relate the obtained knowledge with technology and industry

WEEKLY COURSE CONTENT

Week	Topics	Teaching and Learning Methods and Techniques	Study Materials
1. Week	Introduction	Lecture and recitation	
2. Week	Fundamentals of quantum physics and the properties of crystal structure.	Lecture and recitation	
3. Week	Energy band theory	Lecture and recitation	
4. Week	Energy band theory	Lecture and recitation	
5. Week	Theory of electrical conduction	Lecture, recitation	

Quick Access

Physics (PhD)

- Qualification Awarded
- Level of Qualification
- Qualification Requirements and Regulations
- Specific Admission Requirements
- Recognition of Prior Learning
- Profile of the Program
- Program Key Learning Outcomes
- Occupational Profile of Graduates
- Access to Further Studies
- Course Structure & Credits
- Exam Regulations & Assessment & Grading
- Graduation Requirements
- Mode of Study
- Programme Director(or Equivalent)
- Evaluation Questionnaire
- TYYÇ

Course Information

- Course Information
- Weekly Course Content
- Resources
- Course Category
- CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES
- ECTS credits and course workload

		and homeworks	
6. Week	Theory of electrical conduction	Lecture and recitation	
7. Week	Generation-recombination mechanism	Lecture and recitation	
8. Week	Midterm Exam	Written exam	
9. Week	pn junction diode	Lecture and recitation	
10. Week	pn junction diode	Lecture and recitation	
11. Week	Metal-semiconductor contacts.	Lecture and recitation	
12. Week	Metal-semiconductor contacts.	Lecture and presentation	
13. Week	JFET and MESFET	Lecture and recitation	
14. Week	JFET and MESFET	Lecture and presentation	
15. Week	JFET and MESFET	Lecture and presentation	
16. Week	Final Exam	Written exam	

RESOURCES

Recommended Sources
'Physics of Semiconductor Devices S.M.SZE, Wiley-Interscience, 0471143235, (ISBN-13: 978-0471143239), 2006
'Amorphous and Microcrystalline semiconductor devices' Volume II, J.Kanicki, Artech House Publishers, 0890063796 (ISBN-13: 978-0890063798), 1992
'Physics of Semiconductor Devices' J. Colinge, C.A. Colinge, Springer, 0387285237 (ISBN-13: 978-0387285238), 2005

ASSESSMENT

Measurement and Evaluation Methods and Techniques
Written exam, homeworks and presentations. (60% Final, 30% midterm, 10% homework and presentation)

COURSE CATEGORY

Course Category	Percentage
Core Courses	% 100

CONTRIBUTION OF COURSE LEARNING OUTCOMES TO PROGRAMME OUTCOMES

Programme Outcomes	Contribution Level	DK1	DK2	DK3	DK4	DK5
<u>PY1</u>	3	3	3	3	3	3
<u>PY2</u>	4	4	4	4	4	4
<u>PY3</u>	3	3	3	3	3	3
<u>PY4</u>	5	5	5	5	5	5
<u>PY5</u>	2	2	2	2	2	2
<u>PY6</u>	4	4	4	4	4	4
<u>PY7</u>	2	2	2	2	2	2
<u>PY8</u>	4	4	4	4	4	4

<u>PY9</u>	4	4	4	4	4	4
<u>PY10</u>	2	2	2	2	2	2
<u>PY11</u>	3	3	3	3	3	3
<u>PY12</u>	3	3	3	3	3	3
<u>PY13</u>	3	3	3	3	3	3
<u>PY14</u>	3	3	3	3	3	3
<u>PY15</u>	3	3	3	3	3	3

*DK = Course's Contribution.

	0	1	2	3	4	5
Level of contribution	None	Very Low	Low	Fair	High	Very High

ECTS CREDITS AND COURSE WORKLOAD

Event	Quantity	Duration (Hour)	Total Workload (Hour)
Class Hours (14 weeks)	14	3	42
Final Exam Preparation	1	34.2	34.2
Mid Term Exam Preparation	1	33	33
Further Study	14	3	42
Final Exam	1	2	2
Mid Term Exam 1	1	2	2
Assignment 1	1	18	18
Assignment 2	1	18	18
Total Workload			191.2
Total Workload / 25.5 (s)			7.50
ECTS Credit of the Course			8